National Institute of Environmental Health Sciences

# Characterisation of bio-aerosols during dust storm period in N-NW India

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**Abstract:**

Bio-investigations for pollen and spores were performed on dry free-fall dust and PM 10 aerosol samples, collected from three different locations separated by a distance of 600 km, situated in dust storm hit region of N-NW India. Presence of pollen of trees namely Prosopis (Prosopis juliflora and Prosopis cineraria), Acacia, Syzygium, Pinus, Cedrus, Holoptelea and shrubs namely Ziziphus, Ricinus, Ephedra and members of Fabaceae, Oleaceae families was recorded but with varying proportions in the samples of different locations. Poaceae, Chenopodiaceae/Amaranthaceae, Caryophyllaceae, Brassicaceae and Cyperaceae (sedges) were some of the herb pollen identified in the samples. Among the fungal spores Nigrospora was seen in almost all samples. Nigrospora is a well known allergen and causes health problems. The concentration of trees and shrubs increases in the windward direction just as the climate changes from hot arid to semiarid. The higher frequency of grasses (Poaceae) or herbs could either be a result of the presence of these herbs in the sampling area and hence the higher production of pollen/spores or due to the resuspension from the exposed surface by the high-intensity winds. But we cannot ascertain the exact process at this stage. The overall similarity in the pollen and spore assemblage in our dust samples indicates a common connection or source(s) to the dust in this region. Presence of the pollen of the species of Himalayan origin in our entire samples strongly point towards a Himalayan connection, could be direct or indirect, to the bioaerosols and hence dust in N-NW India. In order to understand the transport path and processes involved therein, present study needs further extension with more number of samples and with reference to meteorological parameters. 

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## Resource Description

**Exposure :**

weather or climate related pathway by which climate change affects health

Air Pollution, Extreme Weather Event

**Air Pollution:** Allergens, Dust

**Extreme Weather Event:** Other Extreme Event

**Extreme Weather Event (other):** dust storm

**Geographic Feature:**

resource focuses on specific type of geography

Desert, Other Geographical Feature

**Other Geographical Feature :** semi-arid

**Geographic Location:** ☑

resource focuses on specific location

Non-United States

**Non-United States:** Asia

**Asian Region/Country:** India

**Health Impact:** ☑

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

**Resource Type:** ☑

format or standard characteristic of resource

Research Article

**Timescale:** ☑

time period studied

Time Scale Unspecified